CLAIMS

1.   A method for generating a schedule for a plurality of employees with varying skill sets for a time period, wherein the plurality of employees have varying overlapping skill sets that enable them to perform various tasks, and wherein employees are shared across tasks within the time period, the method comprising:

    receiving a plurality of user inputs to a scheduling program, including a number of employee designations that each refer to a unique employee, and a number of skill sets that each correspond to one of the employee designations;

    receiving a user input that changes the number of employee designations by indicating at least one changed employee;

    estimating an effect of the at least one changed employee on effective staffing levels for each of the various tasks; and

    generating estimated effective staffing levels for each of the various tasks.

2.   The method of claim 1, wherein the user input that changes the number of employee designations has an effect chosen from a group including adding at least one employee designation and subtracting at least one employee designation.

3.   The method of claim 1, further comprising, determining a number of changes that can be made to the schedule during the scheduling process without simulating a proposed schedule, wherein determining includes comparing a

4   predetermined amount of allowed error and a cumulative error that results from

5   estimating.

1   4.   The method of claim 3, wherein estimating comprises:

2   calculating a total effective work a changed employee will perform;

3   scaling each task by at least one predetermined factor; and

4   adjusting a work distribution for every unique employee other than the changed

5   employee based upon the total effective work the changed employee will perform.

1   5.   The method of claim 4, further comprising distributing the changed

2   employee's effective work across the plurality of tasks.

1   6.   The method of claim 4, wherein the at least one predetermined factor

2   includes a measure of average time to handle a subtask divided by a number of subtasks

3   per time interval, and a measure of how much work remains in a task based upon results

4   of a previous simulation.

1   7.   The method of 4, wherein calculating a total effective work a changed

2   employee will perform comprises applying a function to: a number of skills of the

3   changed employee; proficiencies of the changed employee; and priorities of the changed

4   employee.

8.   The method of claim 4, wherein adjusting the work distribution for every unique employee other than the changed employee includes adjusting an effective contribution to each task worked by one of the other unique employees by a factor reflecting that a different amount of work will be required for tasks worked by the changed employee.

9.   The method of claim 1, wherein the schedule is for staffing a call center, and wherein the plurality of employees comprises a plurality of agents.

10.   The method of claim 6, wherein the schedule is for staffing a call center, wherein the plurality of employees comprises a plurality of agents, a task comprises a call queue, and a subtask comprises a call.

11.   The method of claim 10, wherein the varying skill sets include multiple skills for each agent, and wherein each agent may work on multiple call queues in one time period.

12.   The method of claim 1, further comprising dividing the method such that the method is performed on multiple parallel processors comprising, dividing a schedule into time intervals such that a schedule for each of the time intervals is processed by a different processor.

1   13.   The method of claim 1, further comprising dividing the method such that

2   the method is performed on multiple parallel processors comprising, performing the

3   scheduling process on one processor, and performing simulation on multiple different

4   processors.

1   14.   A system for generating a schedule for a plurality of employees with

2   varying skill sets for a time period, wherein the plurality of employees have varying

3   overlapping skill sets that enable them to perform various tasks, and wherein employees

4   are shared across tasks within the time period, the system comprising:

5   at least one server comprising at least one storage device;

6   at least one client processor coupled to the server through a network, wherein the

7   client processor is coupled to a plurality of storage devices, including a storage device

8   that stores instructions that, when executed, cause the at least one client processor to,

9   receive a plurality of user inputs to a scheduling program, including a

10   number of employee designations that each refer to a unique employee, and a number of

11   skill sets that each correspond to one of the employee designations;

12   receive a user input that changes the number of employee designations by

13   indicating at least one changed employee;

14   estimate an effect of the at least one changed employee on effective

15   staffing levels for each of the various tasks; and

16   generate estimated effective staffing levels for each of the various tasks.

1   15.   The system of claim 14, wherein the storage device that stores the

2   instructions is accessed by the at least one processor through the network.

1   16.   The system of claim 15, wherein the storage device that stores the

2   instructions is the at least one storage device of the server.

1   17.   The system of claim 14, wherein the user input that changes the number of

2   employee designations has an effect chosen from a group including adding at least one

3   employee designation and subtracting at least one employee designation.

1   18.   The system of claim 14, wherein the instructions, when executed, further

2   cause the at least one processor to determine a number of changes that can be made to the

3   schedule during the scheduling process without simulating a proposed schedule, wherein

4   determining includes comparing a predetermined amount of allowed error and a

5   cumulative error that results from estimating.

1   19.   The system of claim 18, wherein the instructions, when executed, further

2   cause the at least one processor to:

3   calculate a total effective work a changed employee will perform;

4   scale each task by at least one predetermined factor; and

5   adjust a measure of effective work for every unique employee other than the

6   changed employee based upon the total effective work the changed employee will

7   perform.

1   20.   The system of claim 19, further comprising distributing the changed

2   employee's effective work across the plurality of tasks.

1   21.   The system of claim 19, wherein the at least one predetermined factor

2   includes a measure of average time to handle a subtask divided by a number of subtasks

3   per time interval, and a measure of how much work remains in a task based upon results

4   of a previous simulation.

1   22.   The system of 19, wherein calculating a total effective work a changed

2   employee will perform comprises applying a function to: a number of skills of the

3   changed employee; proficiencies of the changed employee; and priorities of the changed

4   employee.

1   23.   The system of claim 19, wherein adjusting the work distribution for every

2   unique employee other than the changed employee includes adjusting an effective

3   contribution to each task worked by one of the other unique employees by a factor

4   reflecting that a different amount of work will be required for tasks worked by the

5   changed employee.

1   24.   The system of claim 14, wherein the schedule is for staffing a call center,

2   and wherein the plurality of employees comprises a plurality of agents.

1   25.   The system of claim 21, wherein the schedule is for staffing a call center,

2   wherein the plurality of employees comprises a plurality of agents, a task comprises a call

3   queue, and a subtask comprises a call.

1   26.   The system of claim 25, wherein the varying skill sets include multiple

2   skills for each agent, and wherein each agent may work on multiple call queues in one

3   time period.

1   27.   The system of claim 14, wherein the instructions, when executed, further

2   cause the at least one processor to divide the method such that the method is performed

3   on multiple parallel processors comprising, dividing a schedule into time intervals such

4   that a schedule for each of the time intervals is processed by a different processor.

1   28.   The system of claim 14, wherein the instructions, when executed, further

2   cause the at least one processor to divide the method such that the method is performed

3   on multiple parallel processors comprising, performing the scheduling process on one

4   processor, and performing simulation on multiple different processors.

1   29.   An electromagnetic medium containing executable instructions which,

2   when executed in a processing system, cause the system to generate a schedule for a

3   plurality of employees with varying skill sets for a time period, wherein generating the

4   schedule comprises:

5   receiving a plurality of user inputs to a scheduling program, including a number

6   of employee designations that each refer to a unique employee, and a number of skill sets

7   that each correspond to one of the employee designations;

8   receiving a user input that changes the number of employee designations by

9   indicating at least one changed employee;

10   estimating an effect of the at least one changed employee on effective staffing

11   levels for each of the various tasks; and

12   generating estimated effective staffing levels for each of the various tasks.

1   30.   The electromagnetic medium of claim 29, wherein the user input that

2   changes the number of employee designations has an effect chosen from a group

3   including adding at least one employee designation and subtracting at least one employee

4   designation.

1   31.   The electromagnetic medium of claim 29, wherein generating the schedule

2   further comprises, determining a number of changes that can be made to the schedule

3   during the scheduling process without simulating a proposed schedule, wherein

4   determining includes comparing a predetermined amount of allowed error and a

5   cumulative error that results from estimating.

1   32.   The electromagnetic medium of claim 31, wherein estimating comprises:

2   calculating a total effective work a changed employee will perform;

3   scaling each task by at least one predetermined factor; and

4   adjusting a work distribution for every unique employee other than the changed

5   employee based upon the total effective work the changed employee will perform.

1   33.   The electromagnetic medium of claim 32, wherein generating the schedule

2   further comprises distributing the changed employee's effective work across the plurality

3   of tasks.

1   34.   The electromagnetic medium of claim 32, wherein the at least one

2   predetermined factor includes a measure of average time to handle a subtask divided by a

3   number of subtasks per time interval, and a measure of how much work remains in a task

4   based upon results of a previous simulation.

1   35.   The electromagnetic medium of 32, wherein calculating a total effective

2   work a changed employee will perform comprises applying a function to: a number of

3   skills of the changed employee; proficiencies of the changed employee; and priorities of

4   the changed employee.

1   36.   The electromagnetic medium of claim 32, wherein adjusting the work

2   distribution for every unique employee other than the changed employee includes

3   adjusting an effective contribution to each task worked by one of the other unique

4   employees by a factor reflecting that a different amount of work will be required for tasks

5   worked by the changed employee.

1   37.   The electromagnetic medium of claim 29 wherein the schedule is for

2   staffing a call center, and wherein the plurality of employees comprises a plurality of

3   agents.

1   38.   The electromagnetic medium of claim 34, wherein the schedule is for

2   staffing a call center, wherein the plurality of employees comprises a plurality of agents,

3   a task comprises a call queue, and a subtask comprises a call.

1   39.   The electromagnetic medium of claim 38, wherein the varying skill sets

2   include multiple skills for each agent, and wherein each agent may work on multiple call

3   queues in one time period.

1   40.   The electromagnetic medium of claim 29, wherein generating the schedule

2   further comprises dividing the method such that the method is performed on multiple

3   parallel processors comprising, dividing a schedule into time intervals such that a

4   schedule for each of the time intervals is processed by a different processor.

1   41.   The electromagnetic medium of claim 29, wherein generating the schedule

2   further comprises dividing the method such that the method is performed on multiple

3   parallel processors comprising, performing the scheduling process on one processor, and

4   performing simulation on multiple different processors.